

What is claimed is:

1. An apparatus for manipulating an object displayed on a display device, comprising:

5 a touch screen, which is provided on a display surface of the display device and is sensitive at least to a position thereon at which a body touches, for outputting touch screen information representing a motion of the body;

a plurality of data files which store object data for displaying the object in different states;

10 display information storage means for storing object information including at least

an object type which specifies the shape and physical properties of the object,

15 display position information which specifies a position where the object is displayed on the display device,

file information which specifies the size and location of a part of the object data stored in one of said plurality of data files, and

20 a file name which specifies one of said plurality of data files; and

25 display control means, based on the touch screen information from said touch screen and on the object information included in said display information storage means, for recognizing a manipulation to be conducted on the object and for displaying the object on the display device in accordance with the recognition.

2. An apparatus for manipulating an object displayed on a display device, according to claim 1, wherein

30 based on the touch screen information from said touch screen representing that two bodies touch both sides of the object, move and stop with a distance in between, said display control means recognizes a pick manipulation and displays the object on the display device so that the object moves on the display surface of the display device from where the two bodies touch the both sides

of the object to where the two bodies stop with a distance in between.

3. An apparatus for manipulating an object displayed on a display device, according to claim 1, wherein

5 based on the touch screen information from said touch screen representing that a body touches the object and moves on said touch screen while keeping touched the object, and based on the object information specifying the object type as "out-screen" in said display information storage means, which means that the  
10 object is a large one extending beyond the display screen, said display control means recognizes a scroll manipulation and displays the object on the display device so that the object scrolls on the display surface of the display device.

15 4. An apparatus for manipulating an object displayed on a display device, according to claim 3, wherein

based on the touch screen information from said touch screen representing that the moving body stops, said display control means recognizes a scroll-stop manipulation and displays the  
20 object on the display device so that the scrolling object stops on the display surface of the display device.

5. An apparatus for manipulating an object displayed on a display device, according to claim 1, wherein

25 based on the touch screen information from said touch screen representing that a body touches the object at the center or the center of gravity, moves and stops on said touch screen while keeping touched the object, said display control means recognizes a push manipulation and displays the object on the display device so that the object moves on the display surface of the display device from where the body touches the object to where the body  
30 stops.

6. An apparatus for manipulating an object displayed on a display device, according to claim 1, wherein

based on the touch screen information from said touch screen representing that a body touches the object at a position off the center or the center of gravity thereof, moves and stops on said touch screen while keeping touched the object, said display control means recognizes a push-while rotate manipulation and displays the object on the display device so that the object moves while rotating on the display surface of the display device from where the body touches the object to where the body stops.

7. An apparatus for manipulating an object displayed on a display device, according to claim 1, wherein

based on the touch screen information from said touch screen representing that a body touches the object from a position apart therefrom at a speed higher than a predetermined speed, said display control means recognizes a flip manipulation and displays the object on the display device so that the object moves a distance proportional to the speed with which the body touches the object and in the direction toward which the body touches the object.

8. An apparatus for manipulating an object displayed on a display device, according to claim 1, wherein

based on the touch screen information from said touch screen representing that a body touches the object from a position apart therefrom at a speed higher than a predetermined speed, and based on the object information specifying the object type as "gravity" in said display information storage means, which means that the object is subjected to a gravity, said display control means recognizes a flip-under-gravity manipulation and displays the object on the display device so that the object moves a distance proportional to the speed with which the body touches the object and along a parabola which the object will describe when it

starts traveling in the direction the body touches while receiving the gravity downward.

9. An apparatus for manipulating an object displayed on a display device, according to claim 1, wherein

5 based on the touch screen information from said touch screen representing that a body touches the object, moves and stops on said touch screen while keeping touched the object, and based on the object information specifying the object type as "rollable" in said display information storage means, said display control means recognizes a roll manipulation and displays the object on  
10 the display device so that the object moves with positional relations between the object and the body varying from those at the beginning as the body moves.

10. An apparatus for manipulating an object displayed on a display device, according to claim 1,

15 wherein said touch screen is sensitive to an amount of pressure applied thereon, and

wherein based on the touch screen information from said touch screen representing that a body touches the object with an amount of pressure, and based on the object information specifying the object type as "elastic" in said display information storage means, said display control means recognizes a distort-restore manipulation and displays the object on the  
20 display device so that the object varies in the degree of distortion and restoration according to the amount of pressure applied.  
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